

Oregon Native Truffles: A Primer for Commercial Production on Small Forestlands in the Pacific Northwest

By Eric T. Jones, Institute for Culture and Ecology

Overview

The purpose of this primer is to introduce Oregon native truffles to small-to-medium sized forestland owners interested in income opportunities to supplement or replace timber management. In addition to a basic overview of the resource, this fact sheet contains links to additional information sources to help with inventorying, industry contacts, business planning, and markets.



Oregon black truffles

What is a Truffle?

Truffles are spore-bearing fungi that occur underground and grow in a symbiotic relationship with tree roots. Truffles provide trees with water and nutrients and trees provide truffles with sugar. Truffles are spread by animals that eat the aromatic fruiting body and pass the spores through their feces. The fruiting body looks like a chocolate truffle, a round lump from the size of a cherry to the size of a baseball, depending on the species. Chocolate truffles take their name from the shape and flavor intensity of fungal truffles. Thousands of truffle species exist throughout the world, and though none are yet known to be toxic, only a handful are considered to taste good and be usable in culinary commercial markets. Archaeological evidence shows truffles have been eaten by humans in many parts of the world for thousands of years. Culinary truffles have a strong aroma, and though they seem expensive, they can impart their flavor to a lot of bland food with only a small shaving or slice. Two famous culinary truffles are the French black or Perigord (*Tuber melanosporum*) and the Italian white (*Tuber magnatum*). Some farmers in the Pacific Northwest are cultivating the French Perigord (and the less valuable Burgundy truffle, *Tuber aestivum*) in oak woodlands and hazelnut orchards. The western Pacific Northwest has several common native truffle species desired for their culinary qualities. They currently sell for less than their European truffles, probably for a combination of many reasons, such as having a younger culinary history and lacking visibility to, and easy access by, consumers, and a general lack of experience by chefs in recognizing quality product and maturing techniques. Native Northwest truffles are not better or worse than European truffles, just different, demanding their own unique recipes to highlight their qualities. Below is a short overview of three common edible native Northwest truffles that have commercial markets.

Oregon Black Truffle

The western Pacific Northwest has a culinary black truffle, *Leucangium carthusianum*, formerly referred to in the literature as *Picoa carthusiana*. The outside is black, sometimes smooth, sometimes slightly pitted. The inside is white when immature, and uniformly marbled black and beige when mature. Brown spots inside indicate decay. The truffle can have a long harvest season from early fall to spring. Ask 100 people what the flavor and odor is like and you will get 100 different answers, so perhaps the best marketing approach is to tell consumers it has a unique flavor all to itself. It can be used in savory dishes and sauces, but high temperatures can deplete the flavor and aroma. It goes very well with sweet foods with high fat content like vanilla ice cream or mascarpone.

Oregon White Truffle

The western Pacific Northwest has several species of truffles that appear white or whitish-brown on the surface, but not all are considered culinary truffles. Older literature will refer to all Oregon white edible culinary truffles as *Tuber gibbosum*, but now the literature describes two species, *Tuber gibbosum* and *Tuber oregonense*. *T.oregonense* is good to harvest in late fall to mid-winter and *T.gibbosum* is good to harvest in spring to early summer. When cut open



Oregon white truffles

oregonense appears more reddish inside than *gibbosum*. The truffles range in size from about a dime to quarter on average. *Gibbosum* is larger. Both have a unique flavor for savory sauces, flavoring cheese and butter, and with egg.

Finding Truffles

Habitat - Both Oregon white truffle species and the Oregon black truffle species can be found in Douglas-fir forests in northwestern Oregon and southwestern Washington. They can be found in mixed conifer forests as well, and the whites can sometimes be found in drier forests dominated by oak and other hardwoods. All three species of truffles seem to thrive in younger Douglas-fir forests under age 30 through the native truffles can also be found in other types of conifers. Some harvesters feel that collecting in areas with trees younger than 15 years old could interfere with tree and truffle health, but generally truffles don't fruit well in stands younger than 15 years anyway. Truffles prefer and are easiest to sustainably harvest in the top soil of leaf litter, humus, and sand and silt above the mineral layer. Truffles prefer moist soils that drain well. Truffles tend to be spread out in patches. A patch could be 100 square feet or thousands of square feet. To find a patch, find the habitat in the right season, and keep an eye out for key signs, such as flakes of truffles near a hole where an animal has dug for them. It takes patience and practice to get good at finding patches and once you find a patch you will likely need to check it periodically during the harvest season to gauge the condition of the truffles. The Oregon black can flush multiple times during a season and all three species will have individual truffles maturing at different times during a season depending on conditions including climate, the age of the forest, and soil type. Visit your patches often to learn their unique qualities and to refine your approach to stewarding them for the best truffle production.

Raking - A four prong cultivator-style rake is a common tool for harvesting truffles. Some general rules for sustainable harvesting are to rake gently, keep raked spots to a few square feet in size, avoid raking deeply, be especially careful not to scar tree roots, space your test spots 15 feet or more apart, and replace the litter and duff in each spot you rake before moving on. Get into a rhythm, spend under a minute in each random spot, and you will be able to check/harvest a decent size area overall.

Using Dogs - In the Pacific Northwest more and more harvesters are training dogs to find truffles. Since dogs have powerful noses they can find mature truffles giving off aroma under the ground. For some harvesters, getting small quantities exclusively using a dog is an alternative to using a rake. For harvesters after large quantities, dogs can be a great addition to help find new patches that can be raked. If you don't have the patience and dedication to train your own dog you can hire a truffle dog to help inventory your area. The service should be able to assess what parts of your land might have truffles, find out if you have existing patches, do a small random harvest to verify their claims, and provide you a proprietary map of their findings.



Raking for truffles.

Sustainable Harvesting

Is there a way to harvest Oregon black and white truffles that stimulates greater production and improves ecosystem health? Can you cause damage when the trees are too young or you don't leave enough truffles behind? No long term studies have been done, but it's very unlikely that *Leucangium carthusianum*, *Tuber gibbosum*, and *Tuber oregonense* are at risk. The amount of habitat for these species is so vast and inaccessible in the Pacific Northwest that even with a greatly expanded commercial industry most would go unharvested. Some areas may see intensive pressure, but that is not necessarily an unsustainable situation. Any time you dig or rake you create a disturbance in the ecological community and have some impact on the ecological succession of species. With repeated visits you may become a part of the lifecycle of the places you harvest. Some harvest practices, such as the use of rakes and dogs, may favor some species under some conditions. To increase our understanding of when truffle harvesting has a desirable effect versus an undesirable effect on an ecological system it is important for harvesters to be an active part of the scientific process and make systematic observations over time on what happens in each harvest area. By making regular observations about what works and doesn't work in an area, you will likely find ways to sustain or

improve production in your patches. By sharing your observations with others, you can determine whether the patterns you are observing are unique to your situation or possibly universal across the species.

Commercial Considerations

Quality - If you have truffles, you must learn how to determine when they are mature enough for harvest. If you harvest too soon, the truffle won't continue to mature properly, and if you harvest too late, it could rot before it can be transported and used at the end of the market chain. If kept chilled around 35 degrees, a just-matured truffle can last a week or longer. A mature truffle may have a little moisture on the surface and be slightly spongy. A rotting truffle will often appear wet on the surface, be very spongy, and likely have a putrid odor (especially the black truffle).



Oregon white truffles ready for commercial sale

Processing - When a truffle is harvested it is generally better not to wash it until you ready to use or freeze it, as washing decreases shelf life. Instead, brush off any excess dirt. Most truffles are sold fresh or frozen and some are used in value-added products such as truffle oil, purees, and sauces. An old style (i.e., not frost-free) refrigerator is best for fresh and frozen storage. Truffles intended for freezing should be selected at the peak of maturity. A wicking medium like arborio rice or paper towels can help extend the life of the truffle by drawing off excess moisture (as well as impart truffle flavor to the medium which you can use later). Some feel that wicking has a trade-off of preventing rotting from excess moisture at the expense of the aromatic qualities of the truffle.

Quantity - What constitutes a viable commercial quantity depends on the goals of the individual. A good harvester who already knows of productive truffle patches, on a good day in a good season, might harvest 10 pounds or more. The best commercial harvesters can harvest over 500 pounds in a season from public or large private forests. A small forestland owner with 10 acres of good truffle habitat might only get 15 to 20 pounds in a season, but that could still bring in \$500 to \$1,000 dollars depending on the species and market at the time.

Value - Over the last 20 years the Oregon black truffle has generally sold for roughly twice as much as the Oregon whites. Blacks have generally sold between \$50 and \$150 a pound, and whites between \$25 and \$75 a pound, but some harvesters selling perfectly matured truffles directly to market have obtained \$240 a pound. In general, demand for local wild foods in the Pacific Northwest has been increasing over the last 20 years. Just think of similarly unique forest foods like chanterelle and morel mushrooms. Even ten years ago it was unusual to see them sold in supermarkets; now they are relatively common. As consumers such as chefs and home cooks become more educated about them, Oregon truffles may become less of a rare specialty item and more of a commonly consumed food. Since Oregon truffles are wild food that thus far cannot be cultivated the prices will likely climb as demand increases.

Additional Information and Contacts

- An in-depth market analysis of Oregon culinary truffles can be found in Vasquez, S., Buttolph, L., and E.T. Jones. 2012. Oregon truffle market analysis: A business planning guide for small woodland owners. Institute for Culture and Ecology. Available at www.ntfpinfo.us.
- For contacts to commercial buyers, sellers, and native truffle inventory services visit: www.orforestdirectory.com
- Other: www.oregontruffle.org, www.oregontrufflefestival.com, www.natruffling.org

Acknowledgements

Funding was provided by a grant from USDA National Institute for Food and Agriculture. For more information on nontimber products, including resources for small woodland owners, go to www.ntfpinfo.us.



United States
Department of
Agriculture

National Institute
of Food and
Agriculture